299-E13-51 (A5867)
Log Data Report

Borehole Information:

Borehole:	299-E13-51 (A5867)		Site:	216-B 20 Trench	
Coordinates (WA St Plane)		GWL[1] (ft):	N/A	GWL Date:	N/A
North (m)	East (m)	Drill Date	TOC Elevation	Total Depth (ft)	Type
134306.402	573380.762	12/1965	227.317	100	Cable Tool

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded Steel	2.0	4 1/2	4	1/4	2	80
Welded Steel	0.0	6 5/8	6	5/16	0	100

Borehole Notes:

According to the driller's log, this borehole was originally drilled in 1965 to 100 ft using 6-in. casing. In 1981, a portion of a "broken 6-in. pipe" was removed, which may have been the top 20 ft. A 4-in liner was placed to the bottom of the borehole (apparently 80 ft.) Grout was introduced between the 4- and 6-in casings. Maximum logging depth was 76 ft.

The 4" casing was measured with a steel tape and the 6" casing information was taken from Hanford Wells. There is grout in the annulus between the 4- and 6-in. casing. Zero reference is the top of the casing.

Logging Equipment Information:

Logging System:	Gamma 1 B		Type: Serial No.:	SGLS HpGe (35%) 36TP21095A
Effective Calibration Date:	05/25/2007	Calibration Reference:	HGLP-CC-017	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3 Repeat		
Date	11/06/07	11/07/07	11/07/07		
Logging Engineer	McClellan	McClellan	McClellan		
Start Depth (ft)	2.0	55.0	20.0		
Finish Depth (ft)	56.0	76.0	12.0		
Count Time (sec)	200	200	200		
Live/Real	R	R	R		
Shield (Y/N)	N	N	N		
MSA Interval (ft)	1.0	1.0	1.0		
ft/min	N/A	N/A	N/A		
Pre-Verification	AB018CAB	AB019CAB	AB019CAB		
Start File	AB018000	AB019000	AB019022		
Finish File	AB018054	AB019021	AB019030		
Post-Verification	AB018CAA	AB019CAA	AB019CAA		
Depth Return Error (in.)	0	None	1.0 high		
Comments	No fine gain	No fine gain	Repeat section.		

Log Run	1	2	3 Repeat		
	adjustments made.	adjustments made.			

Logging Operation Notes:

Data were collected using Gamma 1, HO 68B-3574. Pre- and post-survey verification measurements were acquired in the Amersham KUTh-118 field verifier. A centralizer was not installed on the sonde because of casing configuration.

Analysis Notes:

Analyst:	LEGLER	Date:	3/28/08	Reference:	GJO-HGLP 1.6.3, Rev. 0

The pre- and post-survey verification spectra met the acceptance criteria for the established system, but the verification files AB019CAB and AB019CAA had measurements for the full width half max (fwhm) above control limits for the 1461 keV energy line.

A casing correction for a combined 1/4- + 5/16-in. thick casing from 0 – 80 ft, was applied during analysis.

SGLS spectra were processed in batch mode in APTEC SUPERVISIOR to identify peaks and count rates. Concentrations were calculated using an EXCEL template identified as G1Bmay07.xls using an efficiency function and corrections for casing, and dead time as determined by annual calibrations.

Results and Interpretations:

The only manmade radionuclide detected was Cs-137, which was detected at an interval of 5 – 19 ft and intermittently at several depths below 20 ft to total depth logged. The maximum concentration is measured at approximately 83 pCi/g at 18 ft. Inspection of the individual spectra at depths below 20 ft indicates that these detections may be statistical fluctuations.

The driller's log (1965) indicates contamination >400 cpm from 12 to 20 ft, approximately 100 cpm from 20 to 90 ft, and no contamination between 90 and 100 ft. The low level contamination below 20 ft. may not be detectable with the SGLS because or the double casing and grout, or the contamination may have decayed away since 1965.

Pacific Northwest Laboratory logged this borehole in 1987 with a NaI total gamma logging system. The profile of this total gamma log appears to be generally consistent with the current SGLS total gamma log.

The repeat logs show good repeatability.

List of Log Plots:

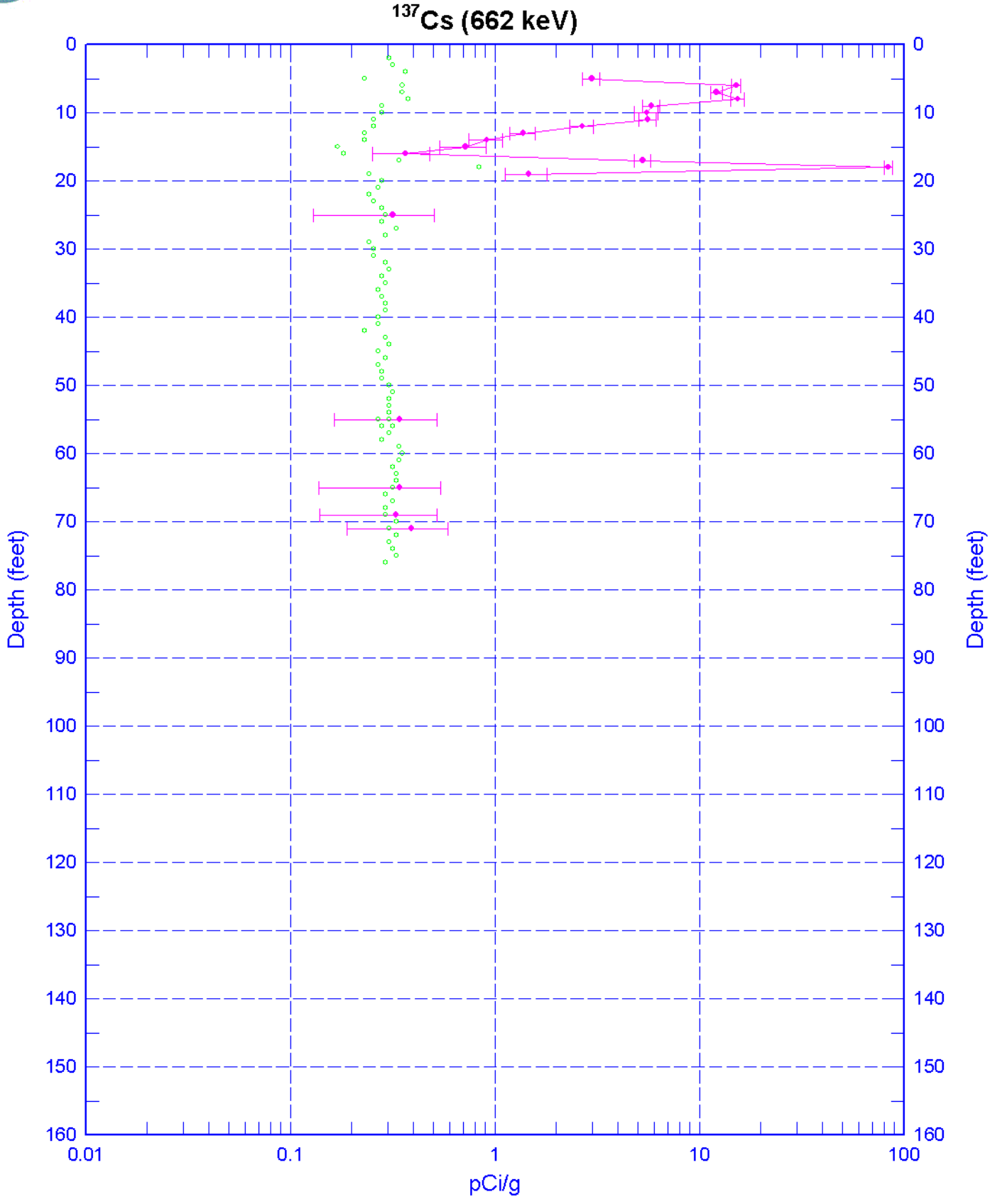
Depth Reference is top of casing

Manmade Radionuclides
Natural Gamma Logs
Combination Plot
Total Gamma & Dead Time
Repeat Section of Manmade Radionuclides
Repeat Section of Natural Gamma Logs

[1] GWL – groundwater level

Stoller
Hanford Office

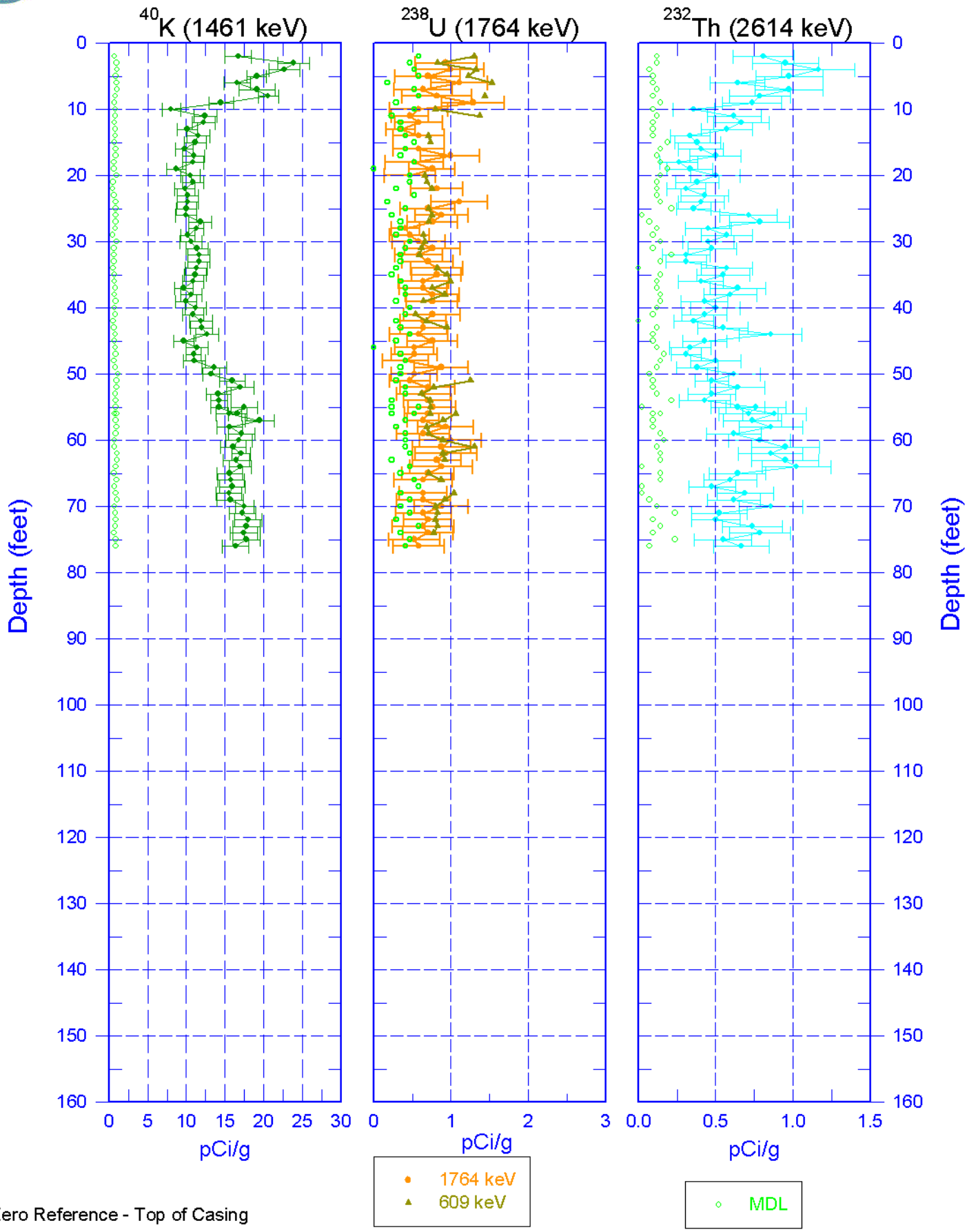
299-E13-51(A5867)
Manmade Radionuclides



Zero Reference - Top of Casing

Stoller
Hanford Office

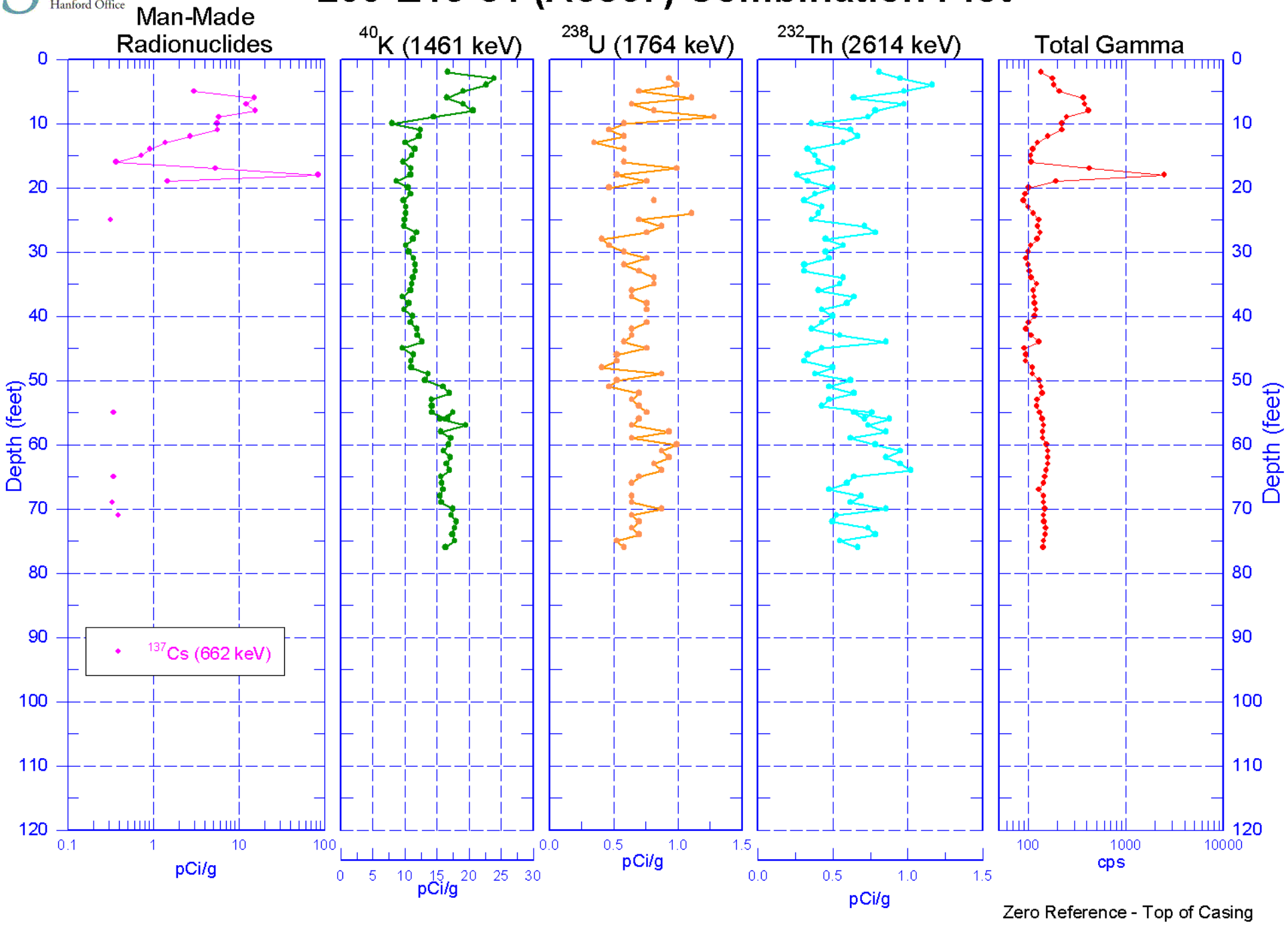
299-E13-51 (A5867)
Natural Gamma Logs



Zero Reference - Top of Casing

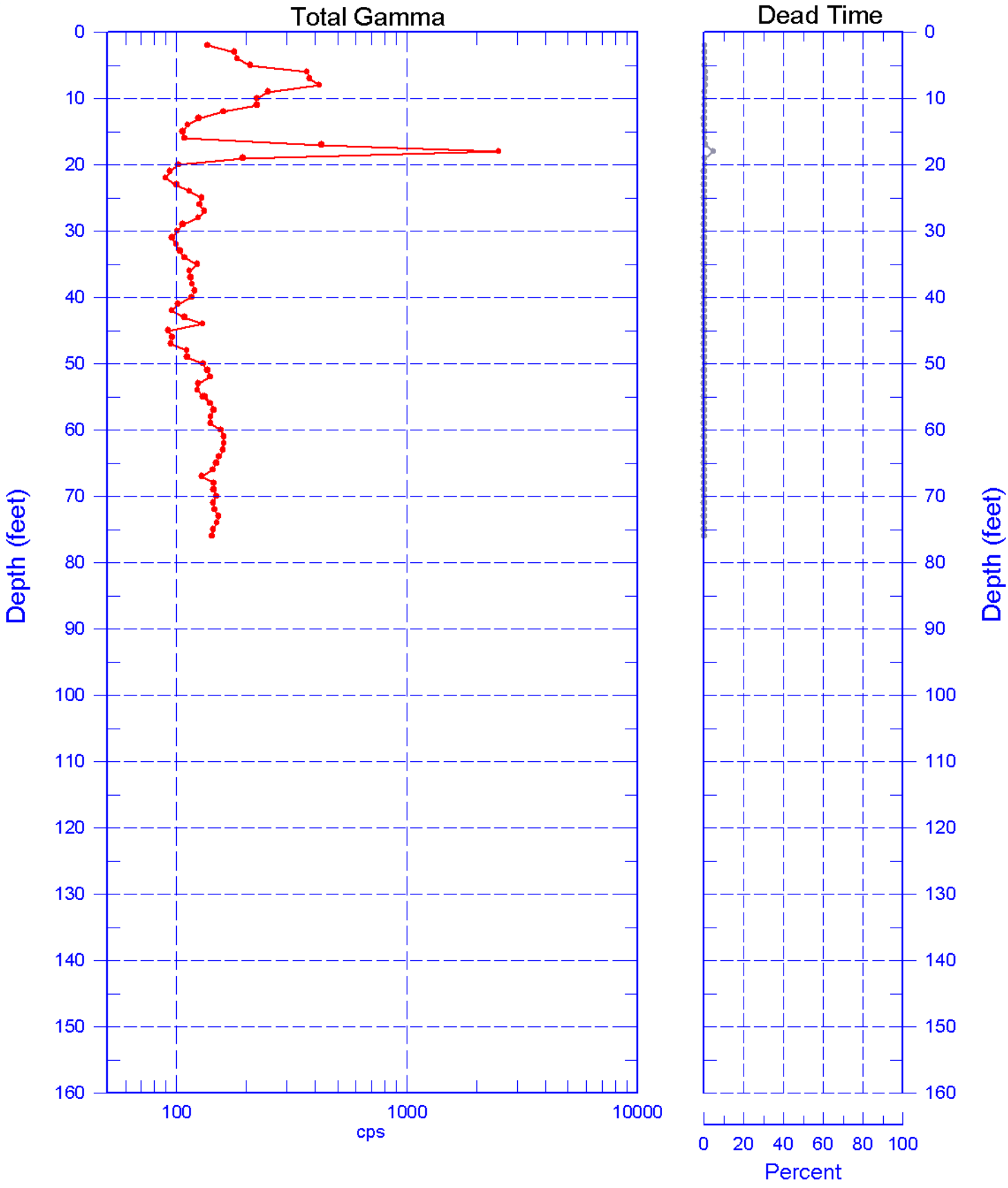
Stoller Hanford Office

299-E13-51 (A5867) Combination Plot



Stoller
Hanford Office

299-E13-51 (A5867)
Total Gamma & Dead Time

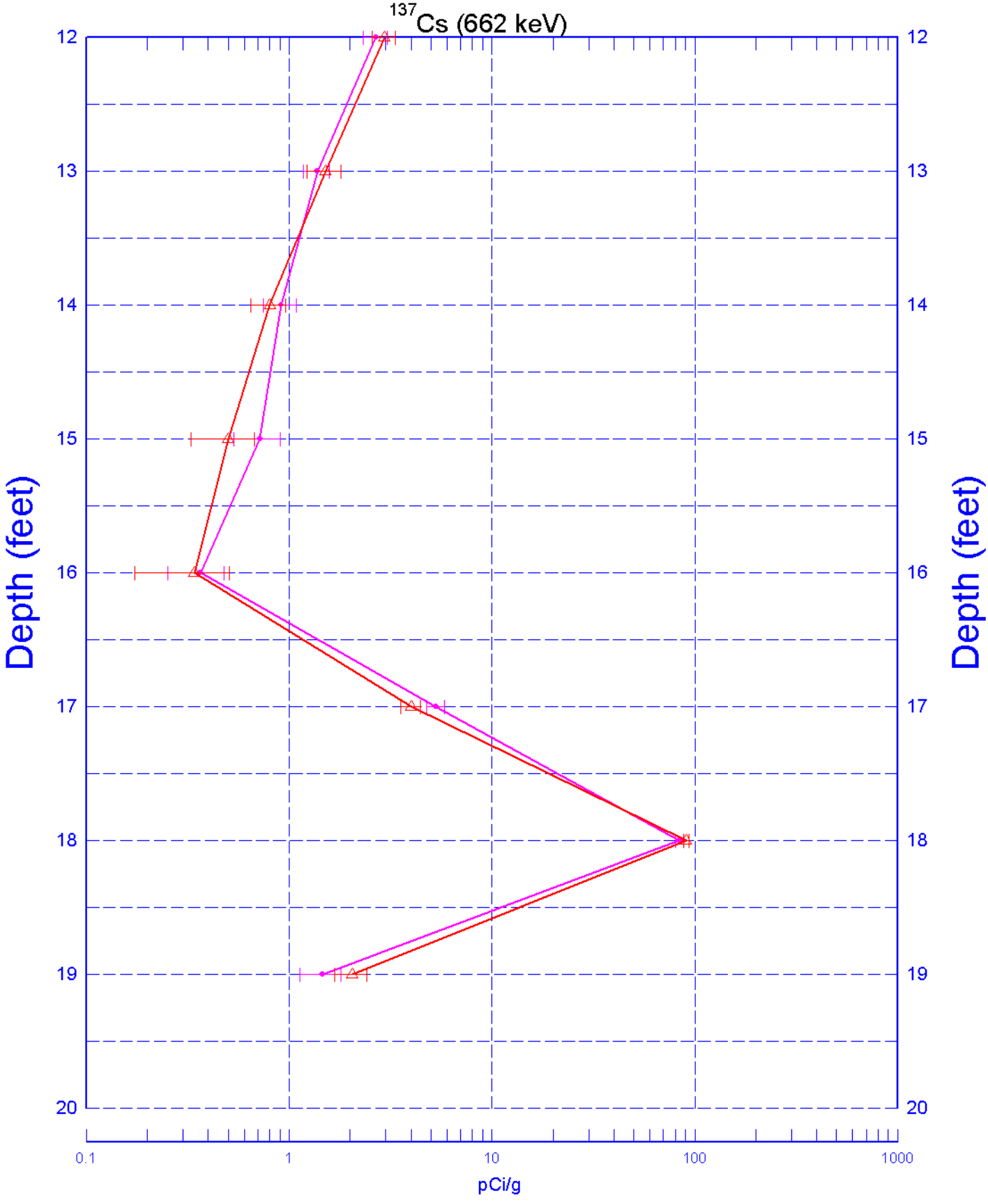


Reference - Top of Casing

Stoller
Hanford Office

299-E13-51 (A5867)

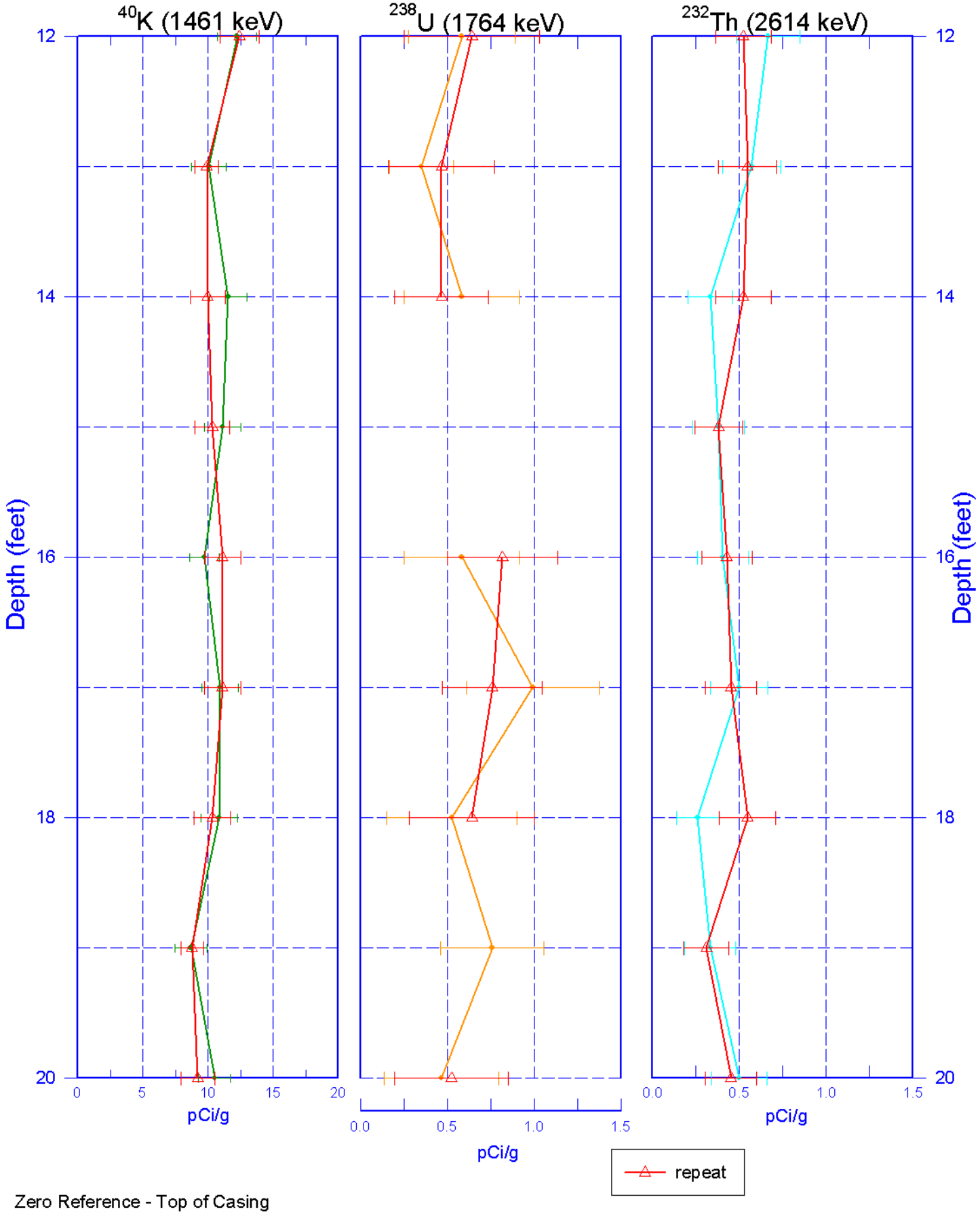
Repeat Section of Manmade Radionuclides



Stoller
Hanford Office

299-E13-51 (A5867)

Repeat Section of Natural Gamma Logs



Zero Reference - Top of Casing